WHAT IS CLAIMED IS:

1. In a receiver for processing a received signal, the received signal including symbols and a frequency offset from baseband, the receiver generating an estimate of the frequency offset, a method comprising:

(a) filtering the received signal to produce a filtered signal, whereby said filtering introduces inter-symbol interference (ISI) in the filtered signal;

(b) converting the filtered signal to a baseband signal that is substantially free of the frequency offset and the ISI, responsive to the frequency-offset estimate and a restorative signal that compensates for the ISI;

(c) detecting the symbols in the baseband signal to produce a decision signal; and

(d) generating, from the decision signal, the restorative signal responsive to the frequency-offset estimate, such that the restorative signal compensates for the ISI.

2. The method of claim 1, step (b) comprises:

(b)(i) frequency-shifting the filtered signal toward baseband by an amount equal to the frequency-offset estimate; and

(b)(ii) reducing the ISI responsive to the restorative signal.

3. The method of claim 2, wherein step (b) further comprises one of:

performing step (b)(i) before performing step (b)(ii), and

performing step (b)(ii) before performing step (b)(i).

4. The method of claim 1, wherein step (d) comprises:

(d)(i) frequency-shifting the decision signal away from baseband by an amount equal to the frequency-offset estimate, to produce a frequency-shifted decision signal; and

(d)(ii) filtering the frequency-shifted decision signal to produce the restorative signal.

5. The method of claim 4, wherein step (b) comprises:

(b)(i) combining the filtered signal with the restorative signal to produce an intermediate signal substantially free of the ISI; and

(b)(ii) frequency-shifting the intermediate signal toward baseband by an amount equal to the frequency-offset estimate, to produce the baseband signal.

6. The method of claim 4, wherein each of steps (a) and (d)(ii) comprise filtering based on a same set of filter coefficients.

7. The method of claim 1, wherein step (d) comprises:

(d)(i) frequency-shifting the decision signal away from baseband by an amount equal to the frequency-offset estimate, to produce a frequency-shifted decision signal;

(d)(ii) filtering the frequency-shifted decision signal to produce a frequency-shifted restorative signal; and

(d)(iii) frequency-shifting the frequency-shifted restorative signal toward baseband by an amount equal to the frequency-offset estimate, to produce the restorative signal.

8. The method of claim 7, wherein step (b) comprises:

(b)(i) frequency-shifting the filtered signal toward baseband by an amount equal to the frequency-offset estimate, to produce an intermediate signal substantially free of the frequency offset; and

(b)(ii) combining the intermediate signal with the restorative signal to produce the baseband signal.

9. The method of claim 7, wherein each of steps (a) and (d)(ii) comprise filtering based on a same set of filter coefficients.

10. The method of claim 1, wherein the received signal includes interference, and step (a) comprises filtering the received signal to reduce the interference.

11. The method of claim 1, wherein step (d) comprises:

(d)(i) producing successive time-delayed portions of the decision signal;

(d)(ii) phase-adjusting each of the time-delayed portions with a respective phase adjustment that is based on the frequency-offset estimate, thereby producing phase-adjusted, time-delayed portions;

(d)(iii) weighting the phase-adjusted, time-delayed portions with respective coefficients, to produce weighted, phase-adjusted, time-delayed portions; and

(d)(iv) combining the weighted, phase-adjusted, time-delayed portions to produce the restorative signal.

12. The method of claim 11, wherein step (a) comprises filtering based on the coefficients of weighting step (d)(iii).

13. The method of claim 11, wherein step (d)(ii) comprises concurrently phase-adjusting the time-delayed portions with the respective phase adjustments.

14. The method of claim 1, wherein step (d) comprises:

(d)(i) producing successive time-delayed portions of the decision signal;

(d)(ii) weighting the time-delayed portions with respective coefficients, to produce weighted, time-delayed portions;

(d)(iii) phase-adjusting each of the weighted, time-delayed portions with a respective phase adjustment that is based on the frequency-offset

estimate, thereby producing weighted, phase-adjusted, time-delayed portions; and

(d)(iv) combining the weighted, phase-adjusted, time-delayed portions to produce the restorative signal.

15. The method of claim 14, wherein step (a) comprises filtering based on the coefficients of weighting step (d)(ii).

16. The method of claim 14, wherein step (d)(iii) comprises concurrently phase-adjusting the weighted, time-delayed portions with the respective phase adjustments.

17. The method of claim 1, wherein step (b) comprises:

(b)(i) frequency-shifting the filtered signal toward baseband by an amount equal to the frequency-offset estimate, to produce an intermediate signal substantially free of the frequency offset; and

(b)(ii) combining the intermediate signal with the restorative signal to produce the baseband signal.

18. A receiver for processing a received signal, the received signal including symbols and a frequency offset from baseband, the receiver including a carrier tracking loop for generating an estimate of the frequency offset, comprising:

a filter for filtering the received signal to produce a filtered signal, whereby said filtering introduces inter-symbol interference (ISI) in the filtered signal;

a converter for converting the filtered signal to a baseband signal that is substantially free of the frequency offset and the ISI, responsive to the frequency-offset estimate and a restorative signal that compensates for the ISI;

a detector for detecting the symbols in the baseband signal to produce a decision signal; and

a restorative signal generator for generating, from the decision signal, the restorative signal responsive to the frequency-offset estimate, such that the restorative signal compensates for the ISI.

19. The receiver of claim 18, wherein the restorative signal generator comprises:

a multiplier for frequency-shifting the decision signal away from baseband by an amount equal to the frequency-offset estimate, to produce a frequency-shifted decision signal; and

an equalizer filter for filtering the frequency-shifted decision signal to produce the restorative signal.

20. The receiver of claim 19, wherein the converter comprises:

a combiner for combining the filtered signal with the restorative signal to produce an intermediate signal substantially free of the ISI; and

a multiplier for frequency-shifting the intermediate signal toward baseband by an amount equal to the frequency-offset estimate, to produce the baseband signal.

21. The receiver of claim 18, wherein the restorative signal generator comprises:

a first multiplier for frequency-shifting the decision signal away from baseband by an amount equal to the frequency-offset estimate, to produce a frequency-shifted decision signal;

an equalizer filter for filtering the frequency-shifted decision signal to produce a frequency-shifted restorative signal; and

a second multiplier for frequency-shifting the frequency-shifted restorative signal toward baseband by an amount equal to the frequency-offset estimate, to produce the restorative signal.

22. The receiver of claim 21, wherein the converter comprises:

a multiplier for frequency-shifting the filtered signal toward baseband by an amount equal to the frequency-offset estimate, to produce an intermediate signal substantially free of the frequency offset; and

a combiner for combining the intermediate signal with the restorative signal to produce the baseband signal.

23. The receiver of claim 18, wherein the received signal includes interference, and step (a) comprises filtering the received signal to reduce the interference.

24. The receiver of claim 18, wherein the restorative signal generator comprises:

a delay stage for producing successive time-delayed portions of the decision signal;

a phase adjustment stage for phase-adjusting each of the time-delayed portions with a respective phase adjustment that is based on the frequency-offset estimate, thereby producing phase-adjusted, time-delayed portions;

a weighting stage for weighting the phase-adjusted, time-delayed portions with respective coefficients, to produce weighted, phase-adjusted, time-delayed portions; and

a combiner combining the weighted, phase-adjusted, time-delayed portions to produce the restorative signal.

25. The receiver of claim 19, wherein the filter uses the coefficients of the weighting stage as filter coefficients.

26. The receiver of claim 18, wherein the restorative signal generator comprises:

a delay stage for producing successive time-delayed portions of the decision signal;

a weighting stage for weighting the time-delayed portions with respective coefficients, to produce weighted, time-delayed portions;

a phase adjustment stage for phase-adjusting each of the weighted, time-delayed portions with a respective phase adjustment that is based on the frequency-offset estimate, thereby producing weighted, phase-adjusted, time-delayed portions; and

a combiner for combining the weighted, phase-adjusted, time-delayed portions to produce the restorative signal.

27. The receiver of claim 26, wherein the filter uses the coefficients of the weighting stage as filter coefficients.

28. The receiver of claim 18, wherein the converter comprises:

a multiplier for frequency-shifting the filtered signal toward baseband by an amount equal to the frequency-offset estimate, to produce an intermediate signal substantially free of the frequency offset; and

a combiner combining the intermediate signal with the restorative signal to produce the baseband signal.

29. A receiver for processing a received signal, the received signal including symbols and a frequency offset from baseband, the receiver generating an estimate of the frequency offset, a method comprising:

means for filtering the received signal to produce a filtered signal, whereby said filtering introduces inter-symbol interference (ISI) in the filtered signal;

means for converting the filtered signal to a baseband signal that is substantially free of the frequency offset and the ISI, responsive to the frequency-offset estimate and a restorative signal that compensates for the ISI;

means for detecting the symbols in the baseband signal to produce a decision signal; and

means for generating, from the decision signal, the restorative signal responsive to the frequency-offset estimate, such that the restorative signal compensates for the ISI.

30. A Decisional Feedback Equalizer (DFE) for use in a receiver that process a received signal, the received signal including symbols and an undesired frequency offset, the receiver being configured to generate a decision signal at or near baseband representative of detected symbols, the receiver being configured to generate an estimate of the frequency offset, the receiver including a pre-filter that introduces inter-symbol interference into the received signal, comprising:

a delay stage for producing successive time-delayed portions of the decision signal;

a phase adjustment stage and a weighting stage that together produce, from the time-delayed portions, weighted, time-delayed portions based on weighting coefficients and the frequency-offset estimate; and

a combiner for combining the weighted, phase-adjusted, time-delayed portions to produce a restorative signal that compensates for the inter-symbol interference.